CLAIM AMENDMENTS

1. (currently amended) Electrical system [[(1)]] comprising:

a central unit [[(10)]];

more than one node ~~(20-24; 28; 28')~~; and

bus arrangement [[(30)]] connecting the more than one node ~~(20-24; 28; 28')~~ and the central unit [[(10)]] for transfer of data there between;

the bus arrangement [[(30)]] having a single conductor pair ~~(31, 32)~~;

the central unit [[(10)]] comprising a voltage supply [[(12)]] arranged to provide a voltage between the conductors ~~(31, 32)~~ in the conductor pair;

the central unit [[(10)]] further comprising a voltage modulator [[(14)]], arranged to modulate at least two successive voltage pulses ~~(60, 61; 102)~~ onto the conductor pair ~~(31, 32)~~ representing data to be transferred from the central unit [[(10)]] to the more than one node ~~(20-24; 28;28')~~;

whereby a time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ between the successive voltage pulses ~~(60, 61; 102)~~ takes one of n distinct predetermined first values, where n>2, each of the n distinct predetermined values corresponding to a predetermined data quantity;

the more than one node ~~(20-24; 28; 28')~~ comprising a detector [[(25)]] of the modulated voltage pulses or quantities directly related thereto; and

the more than one node ~~(20-24; 28; 28')~~ further comprising an interpreter [[(26)]], interpreting the detected modulated voltage pulses as transferred data;

the interpreter [[(26)]] in turn comprises means for determining the time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ between the successive voltage pulses ~~(60, 61; 102)~~ and means for associating the determined time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ with a corresponding data quantity,

~~characterized in that~~

the more than one node ~~(20-24; 28; 28')~~ further ~~comprise:~~ comprising means [[(27)]] for creating a current pulse ~~(64; 106)~~ on the conductor pair ~~(31, 32)~~ representing data to be transferred from a respective node ~~(20-24; 28; 28')~~ to the central unit [[(10)]];

whereby a time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102~~) takes one of k distinct predetermined values, where k>2, each of the k distinct predetermined values corresponding to a predetermined data quantity; and

the central unit [[(10)]] further ~~comprises~~ comprising:

detector [[(16)]] for the current pulses;

means [[(17)]] for determining the time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~; and

means [[(18)]] for associating, in the central unit [[(10)]], the determined time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~ with a corresponding data quantity.

2. (currently amended) Electrical system according to claim 1, ~~characterized in that~~ <u>wherein</u> the more than one node ~~(20-24; 28; 28')~~ are arranged to send data to the central unit [[(10)]] within the same time period between two successive voltage pulses ~~(60, 61; 102)~~.

3. (currently amended) Electrical system according to claim 1 [[or 2]], ~~characterized in that~~ <u>wherein</u> the more than one node ~~(20-24; 28; 28')~~ further comprise means for extracting electrical power from the voltage between the conductor pair ~~(31, 32)~~.

4. (currently amended) Electrical system according to claim 3, ~~characterized by~~ <u>further comprising</u> a peripheral unit [[(46)]] associated with the more than one node ~~(20-24; 28; 28')~~, said peripheral unit [[(46)]] being connected directly between the conductor pair ~~(31, 32)~~ via only switching means ~~(72; 70A, 70B)~~.

5. (currently amended) Method of communication in an electrical system [[(1)]] having a central unit [[(10)]] connected to more than one node ~~(20-24; 28; 28')~~ by a common bus arrangement [[(30)]] with a single conductor pair ~~(31, 32)~~, comprising the steps of:

providing a voltage between the conductors ~~(31, 32)~~ in the conductor pair;

modulating, in the central unit [[(10)]], at least two successive voltage pulses ~~(60, 61; 102)~~ on the conductor pair representing data to be transferred from the central unit [[(10)]] to the more than one node ~~(20-24; 28; 28')~~;

whereby a time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ between the successive voltage pulses ~~(60, 61; 102)~~ takes one of n distinct predetermined first values, where n>2, each of the n distinct predetermined values corresponding to a predetermined data quantity;

detecting the modulated voltage pulses ~~(60, 61; 102)~~ or quantities directly related thereto in the more than one node ~~(20-24; 28; 28')~~; and

interpreting, in the more than one node ~~(20-24; 28; 28')~~, the detected modulated voltage pulses ~~(60, 61; 102)~~ as transferred data, by the part steps of:

determining the time separation ~~(Δt1- Δt7; Δt9- Δt12)~~; ~~and~~

associating the determined time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ with a corresponding data quantity,

~~characterized by the further steps of:~~

creating, in at least one of the more than one node ~~(20-24; 28; 28')~~, a current pulse ~~(64; 106)~~ on the conductor pair ~~(31, 32)~~ representing data to be transferred from the at least one of the more than one node ~~(20-24; 28; 28')~~ to the central unit [[(10)]];

whereby a time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~ takes one of k distinct predetermined values, where k>2, each of the k distinct predetermined values corresponding to a predetermined data quantity;

detecting the current pulses ~~(64; 106)~~ in the central unit [[(10)]];

determining, in the central unit [[(10)]], the time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~; and

associating, in the central unit [[(10)]], the determined time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~ with a corresponding data quantity.

6. (currently amended) Method according to claim 5, ~~characterized in that~~ <u>wherein</u> the more than one node ~~(20-24; 28; 28')~~ send data to the central unit [[(10)]] within the same time period between two successive voltage pulses ~~(60, 61; 102)~~.

7. (currently amended) Method according to claim 5 [[or 6]], ~~characterized by~~ <u>comprising</u> the further step of supplying electrical power to the more than one node ~~(20-24; 28; 28')~~ from the voltage between the conductor pair ~~(31, 32)~~.

8. (currently amended) Method according to ~~any of the claims 5 to 7~~ <u>claim 5</u>, ~~characterized by~~ <u>comprising the further step of</u> sending calibration data from the central unit [[(10)]] to the more than one node ~~(20-24; 28; 28')~~ as two voltage pulses having a time separation being distinct in relation to time separations representing other data than calibration data.

9. (currently amended) Method according to claim 8, ~~characterized in that~~ <u>wherein</u> said time separation representing said calibration data is larger than time separations representing other data than calibration data.

10. (currently amended) Method according to claim 8 [[or 9]], ~~characterized in that~~ <u>wherein</u> said time separation representing said calibration data is situated within a predetermined range.

11. (currently amended) Method according to ~~any of the claims 8 to 10~~ <u>claim 8</u>, ~~characterized by~~ <u>comprising the further step of</u> calibrating a node time reference of at least one of the more than one node ~~(20-24; 28; 28')~~ based on a measured value of the voltage pulse time separation ~~(Δt5; Δt7; Δt12)~~ of said calibration data.

12. (currently amended) Method according to ~~any of the claims 8 to 11~~ claim 8, ~~characterized in that~~ wherein the data to be transferred is sent in data frames, whereby the method comprises the further step of synchronizing the start of each data frame to the m:th voltage pulse following a calibration data period.

13. (currently amended) Method according to claim 12, ~~characterized in that~~ wherein a time separation between the start of two successive data frames is equal to a predetermined synchronizing value, whereby the method comprises the further steps of calibrating node time reference of at least one of the more than one node ~~(20-24; 28; 28')~~ based on a measured value of the time separation between the start of two successive data frames and additionally based on the predetermined synchronising value.

14. (currently amended) Method according to ~~any of the claims 5 to 13~~ claim 5, ~~characterized in that~~ wherein the data to be transferred is sent in data frames, in which at least one data position of data transferred from at least one of the more than one node ~~(20-24; 28; 28')~~ to the central unit [[(10)]] is assigned as an express data position, whereby at least one of the more than one node ~~(20-24; 28; 28')~~ sends data associated with an express message in the express data position.

15. (currently amended) Method according to claim 14, ~~characterized in that~~ wherein at least two of the more than one node ~~(20-24; 28; 28')~~ send data associated with an express message in the same express data position.

16. (currently amended) Method according to claim 14 [[or 15]], ~~characterized in that~~ wherein said data associated with an express message comprises an identification of the node ~~(20-24; 28; 28')~~ sending said data associated with an express message.

17. (currently amended) Method according to ~~any of the claims 5 to 13~~ claim 5, ~~characterized by~~ comprising the further step of reflecting data sent from a node to the central unit by data sent from the central unit within the same main period, said data sent from the central unit having a unique correspondence with said data sent to the central unit.

18. (currently amended) Method according to claim 17, ~~characterized by~~ comprising the further step of allowing a node originally sending the reflected data to continue sending data within a remaining part of a present frame.

19. (currently amended) Electric signal for data communication, comprising:

at least two successive voltage pulses ~~(60, 61; 102)~~ modulated on a main voltage, whereby a time separation ~~(Δt1- Δt7; Δt9- Δt12)~~ between the successive voltage pulses ~~(60, 61; 102)~~ takes one of n distinct predetermined first values, where ~~n>2,~~ n>2;

each of the n distinct predetermined values corresponding to a predetermined data quantity~~, characterized by~~ ; and

at least one current pulse ~~(64; 106),~~ ;

whereby a time separation ~~(Δt8; Δt13- Δt16)~~ between the current pulse ~~(64; 106)~~ and the closest preceding voltage pulse ~~(60; 102)~~ takes one of k distinct predetermined values, where ~~k>2,~~ k>2;

each of the k distinct predetermined values corresponding to a predetermined data quantity.